

## CLAIMS

1. A honeycomb structure comprising:

a segment part including a plurality of first honeycomb segments bonded together by a bonding material, the plurality  
5 of first honeycomb segments having a plurality of through holes passing through along an one axis and being separated by partition walls; and

a plurality of second honeycomb segments arranged in the periphery of the segment part in a cross section  
10 perpendicular to the one axis, bonded and integrated with the segment part, having a plurality of through holes passing through along the one axis and being separated by partition walls, wherein

a cross sectional area of the first honeycomb segments  
15 is smaller than the cross sectional area of the second honeycomb segments in the cross section perpendicular to the one axis.

2. The honeycomb structure according to claim 1,

20 wherein, a cross sectional area of the segment part is equal to or above  $1/3$  and equal to or below  $1/2$  of the cross sectional area of the entire honeycomb structure in the cross section perpendicular to the one axis.

25 3. The honeycomb structure according to claim 1,

wherein, the cross sectional area of the first honeycomb segment is smaller than a square area with 40mm

sides.

4. The honeycomb structure according to claim 1,  
wherein, the cross sectional area of the second  
5 honeycomb segment is larger than a square area with 30mm  
sides.

5. The honeycomb structure according to claim 1,  
wherein, the cross sectional area of the second  
10 honeycomb segment is 4 times or greater than the cross  
sectional area of the first honeycomb segment.

6. The honeycomb structure according to claim 1,  
wherein, a cross sectional shape of the honeycomb  
15 structure in the cross section perpendicular to the one axis  
is irregular.

7. The honeycomb structure according to any one of claim 1  
to 6,  
20 wherein, the cross sectional area of the first and the  
second honeycomb segments are adjusted that an increase of a  
pressure loss is equal to or less than 20%, assuming that the  
pressure loss of exhaust gas passing through a same shaped  
honeycomb structure only formed by bonding honeycomb segments  
25 having square cross sections with 35mm side.